

# 2023 NASA SCIENCE

Small Packages, Impactful Science

**Florence Tan**

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NASA Science Mission Directorate

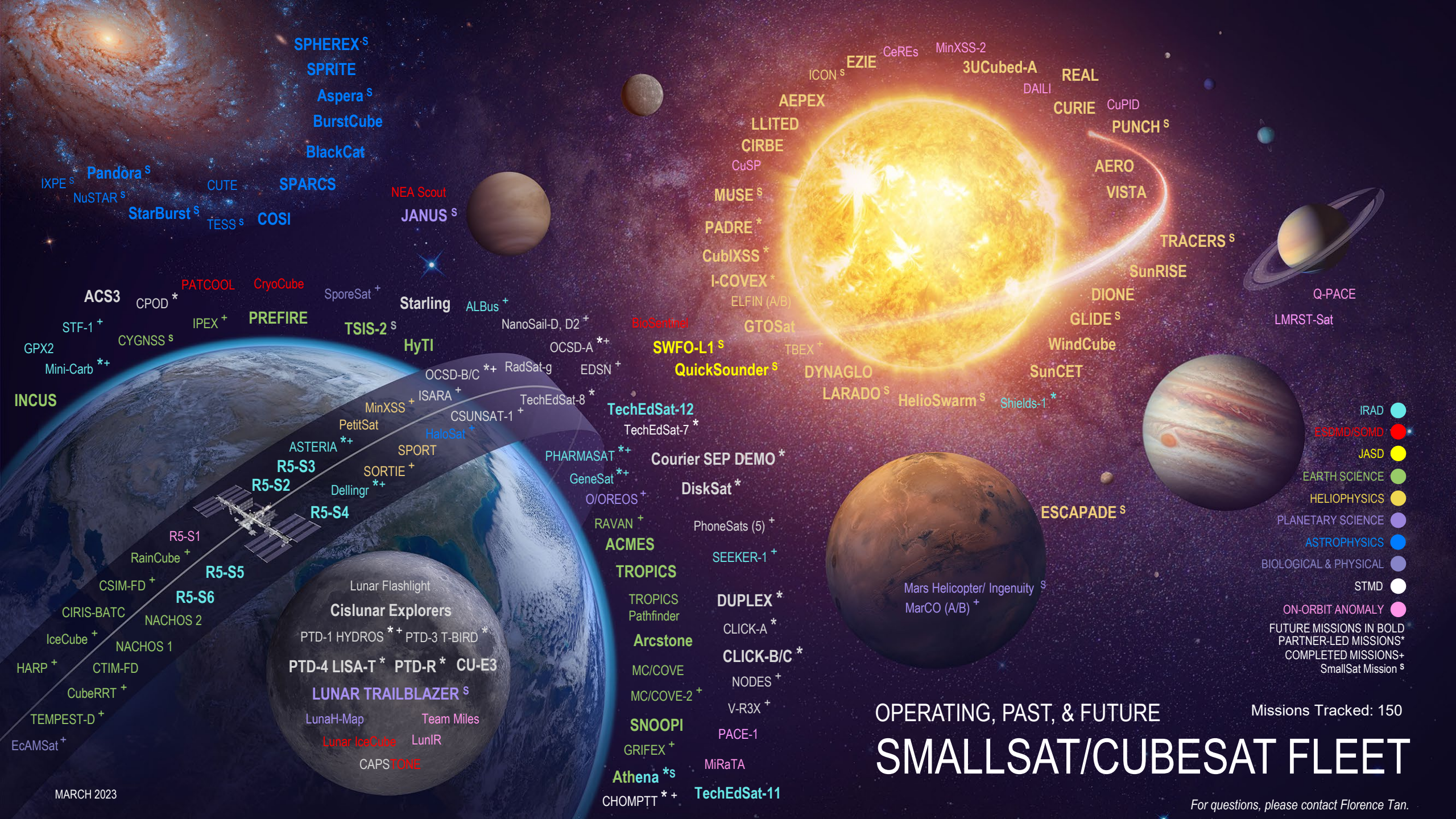
April 2023











# OPERATING, PAST, & FUTURE SMALLSAT/CUBESAT FLEET

Missions Tracked: 150

For questions, please contact Florence Tan.



# Mars Sample Return Animation Video

<https://mars.nasa.gov/msr/multimedia/videos/?v=523>

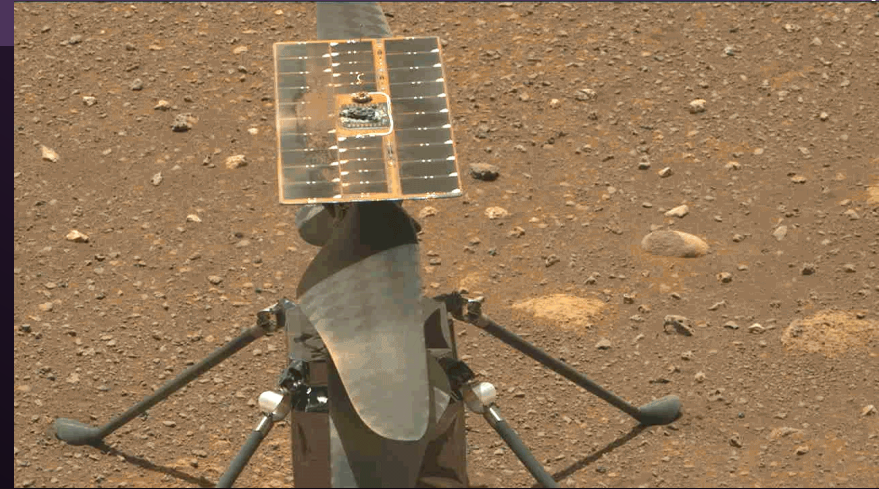




# Ingenuity: Taking Flight on Mars



*First flight, April 19, 2021*



*Above: Testing the carbon fiber blades*

*Below: Remains of Perseverance back shell, imaged April 19, 2022*



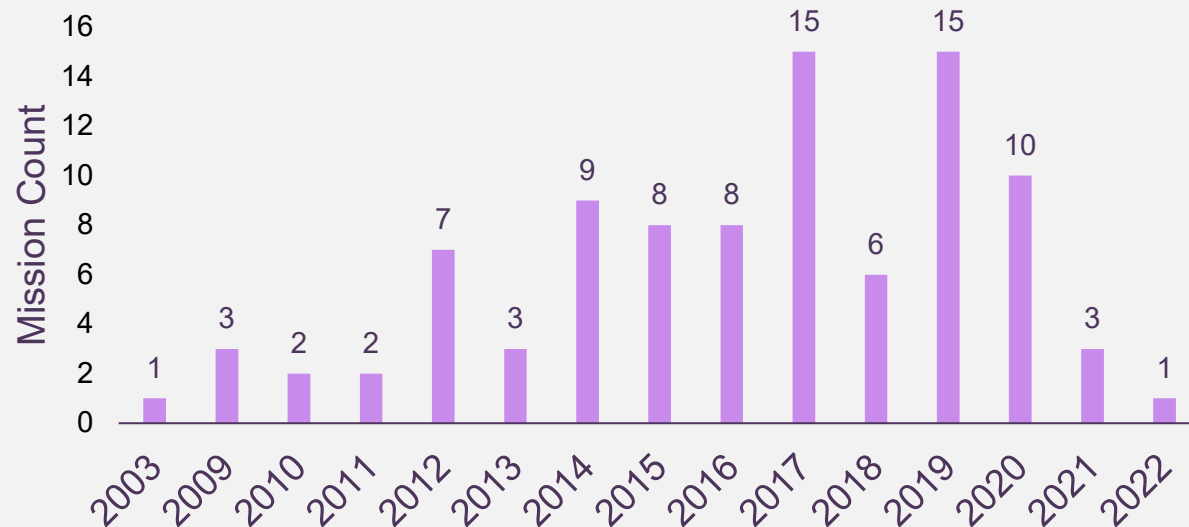


# NASA Science SmallSat Missions at a Glance

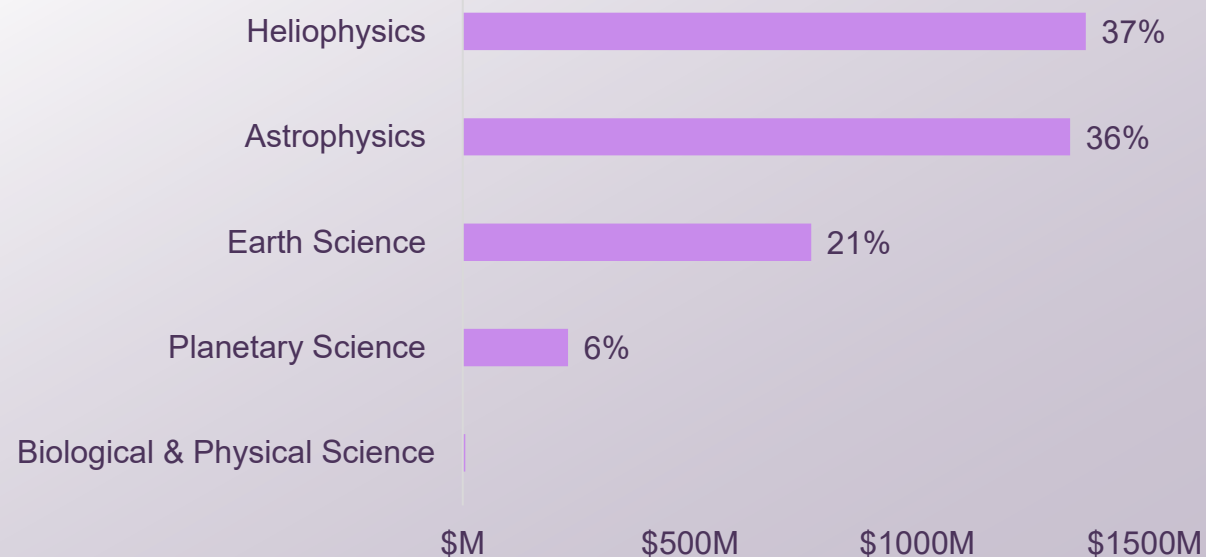


**20** COMPLETED  
**47** IN FORMULATION /  
 IMPLEMENTATION  
**15** IN OPERATION  
**7** FAILURES  
**3** CANCELLED  
**46** STUDIES  
**1** CLOSED WITHOUT FLIGHT

**Science Missions by Solicitation Year**



**Total Missions & Studies Funded**



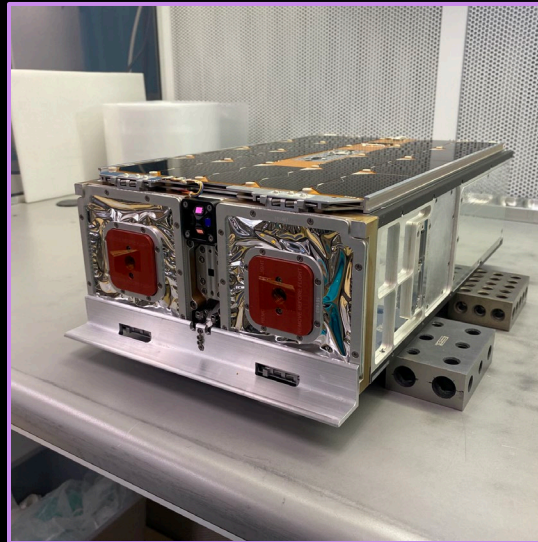


# Compact Solar Irradiance Monitor-Flight Demo (CSIM-FD) / Compact Total Irradiance Monitor-Flight Demo (CTIM-FD)

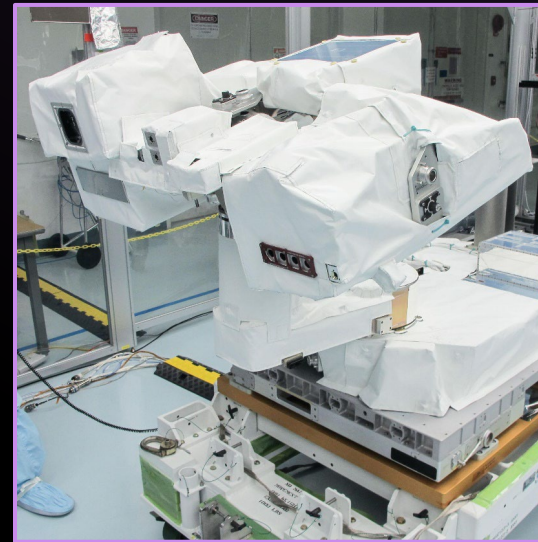
Measures solar spectral irradiance (SSI), and monitoring Total Solar Irradiance (TSI) to explore how solar variability impacts the Earth's climate, contributing to long-term continuity measurements from TSIS SIM/TIM and SORCE SIM/TIM



CSIM: 11kg CubeSat  
• Built by LASP



CTIM: 11kg CubeSat  
• Built by LASP



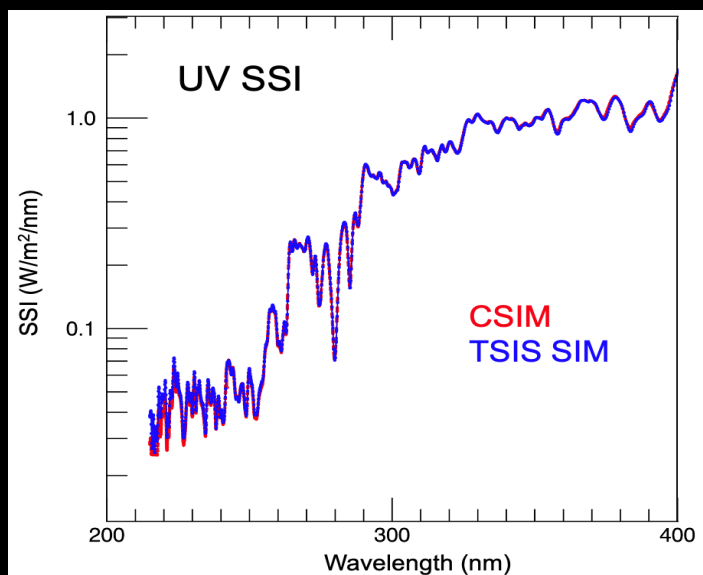
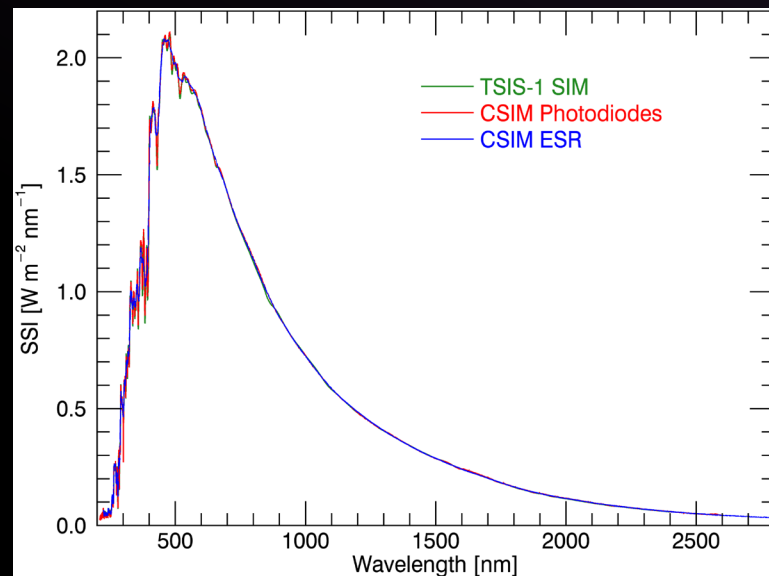
TSIS-1: 363kg  
• Built by LASP  
• Mounted to the ISS



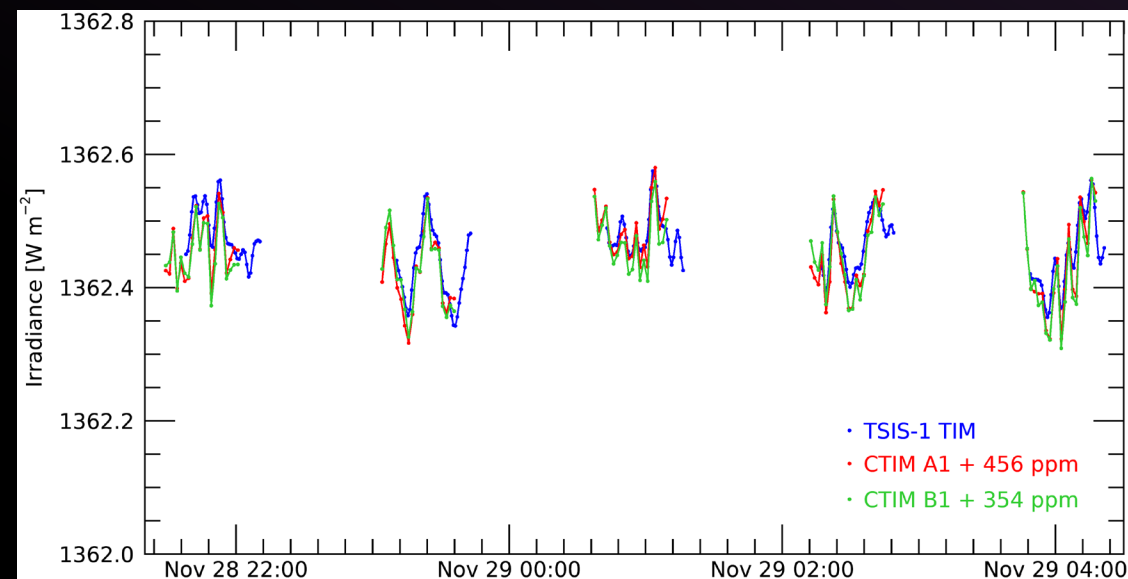
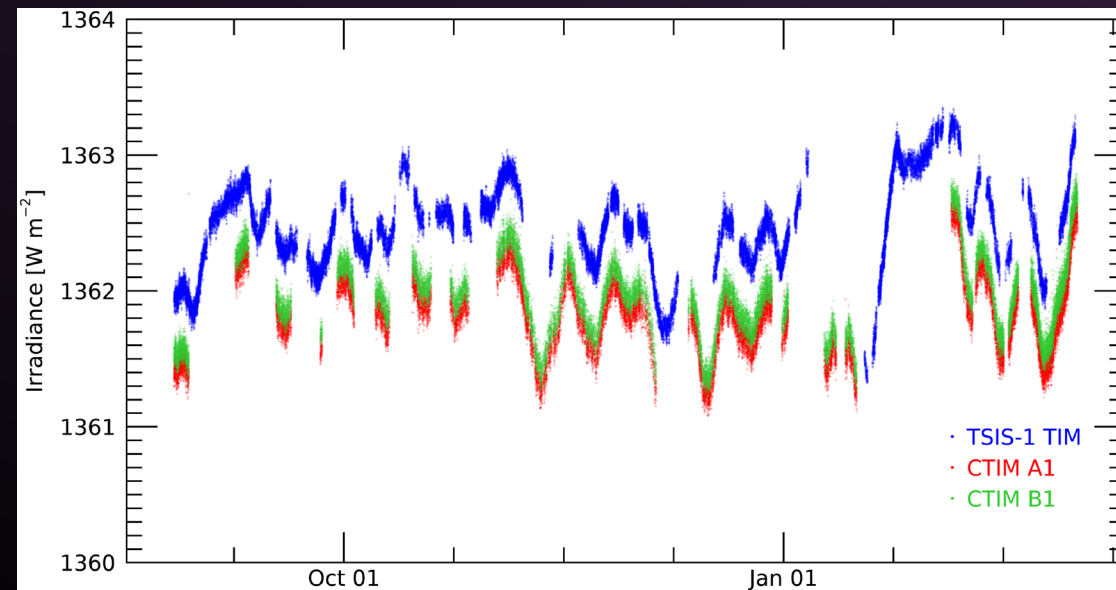
SORCE: 290kg  
• On an Orbital  
LEOSTar-2 bus



CSIM spectrum compared to TSIS spectrum

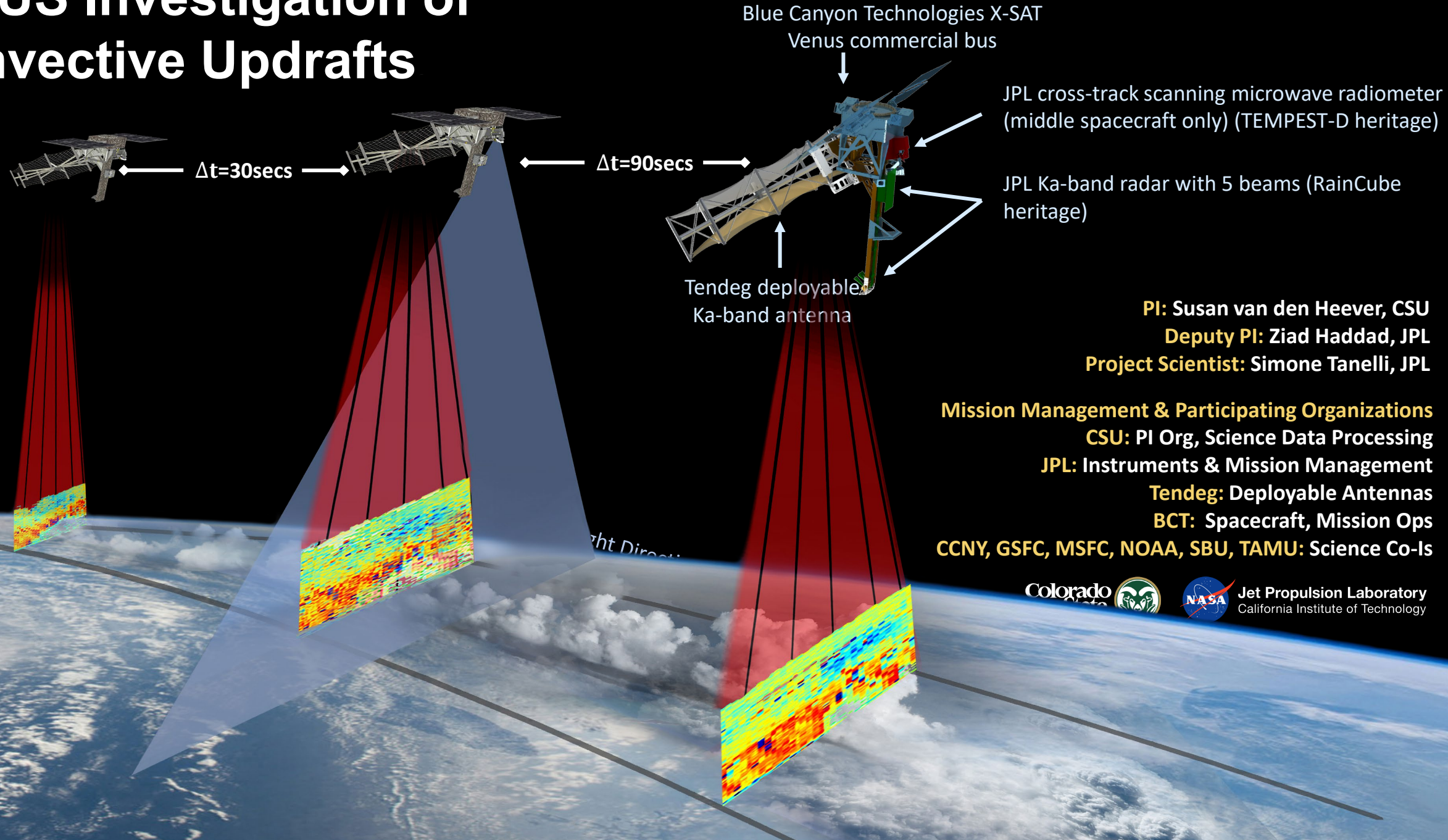


CTIM TSI measurements compared to TSIS TIM





# INCUS Investigation of Convective Updrafts



**PI:** Susan van den Heever, CSU

**Deputy PI:** Ziad Haddad, JPL

**Project Scientist:** Simone Tanelli, JPL

**Mission Management & Participating Organizations**

**CSU:** PI Org, Science Data Processing

**JPL:** Instruments & Mission Management

**Tendeg:** Deployable Antennas

**BCT:** Spacecraft, Mission Ops

**CCNY, GSFC, MSFC, NOAA, SBU, TAMU:** Science Co-Is

Colorado



Jet Propulsion Laboratory  
California Institute of Technology



A young girl with long dark hair, wearing a red and white striped tank top with white stars, is holding a glass jar filled with glowing fireflies. She is looking down at the jar with a focused expression. The background is a magical night scene with a field of tall grass, distant mountains, and a starry sky with the Milky Way visible. A boy is seen in the distance, also holding a jar. A bird is flying in the sky. The overall atmosphere is dreamy and whimsical.

# EXPLORE

With Us



# BACKUP

